UTeM
UNIVERSITI TEKNIKAL MALAYSIA MELAKA

FACULTY OF TECHNOLOGY MANAGEMENT AND TECHNOPRENEURSHIP

2026

GUIDELINES FOR DOCTORATE THESIS (DOCTOR OF TECHNOLOGY MANAGEMENT)

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	FACULTY OF TECHNOLOGY MANAGEMENT AND TECHNOPPRENERUSHIP **UNIVERSITI TEKNIKAL MALAYSIA MELAKA (UTEM)**
	DOCTOR OF TECHNOLOGY MANAGEMENT (DTM) **DOCTORATE THESIS GUIDELINES**

DOCTORATE THESIS PRESCRIPTION

1.0 INTRODUCTION

The Doctor of Technology Management (DTM) doctorate thesis represents the core component of the doctoral program, designed to demonstrate a candidate's ability to undertake independent, original, and significant research within the field of technology management. It serves as an essential platform for candidates to integrate advanced theoretical knowledge, analytical skills, and professional experience in addressing complex and practical issues in their respective industries or research domains.

The DTM research journey is structured into three progressive courses: **Proposal of Doctorate Thesis**, **Doctorate Thesis 1**, and **Doctorate Thesis 2**. Each course has been designed to systematically guide candidates from conceptualization to the completion of a scholarly research thesis. Through these stages, candidates will refine their research problem, develop a robust methodology, analyze data critically, and contribute new insights to the discipline of technology management.

This guideline aims to assist doctoral candidates in understanding the processes, expectations, and academic standards required at each stage of the research journey. It also outlines the supervisory structure, assessment procedures, and institutional requirements established by the University to ensure that every DTM doctorate thesis meets the highest standards of academic excellence and practical relevance.

2.0 OBJECTIVES

The main objectives of the Doctor of Technology Management (DTM) doctorate thesis are as follows:

a. To provide candidates with the opportunity to integrate and apply advanced knowledge, theories, and frameworks acquired throughout the Doctor of Technology Management program to address real-world technological and managerial challenges.

b. To cultivate candidates' ability to conduct independent, systematic, and original research that contributes to the advancement of knowledge and practice in the field of technology management.

c. To enhance candidates' competencies in critical analysis, research design, data interpretation, and academic writing, with an emphasis on solving complex, technology-driven organizational problems.

d. To strengthen candidates' capacity to translate research findings into practical strategies or innovations that support organizational and societal advancement; and

e. To ensure that candidates undertake a scholarly research project grounded in rigorous academic principles, ethical standards, and intellectual reasoning.

3.0 WORKFLOW

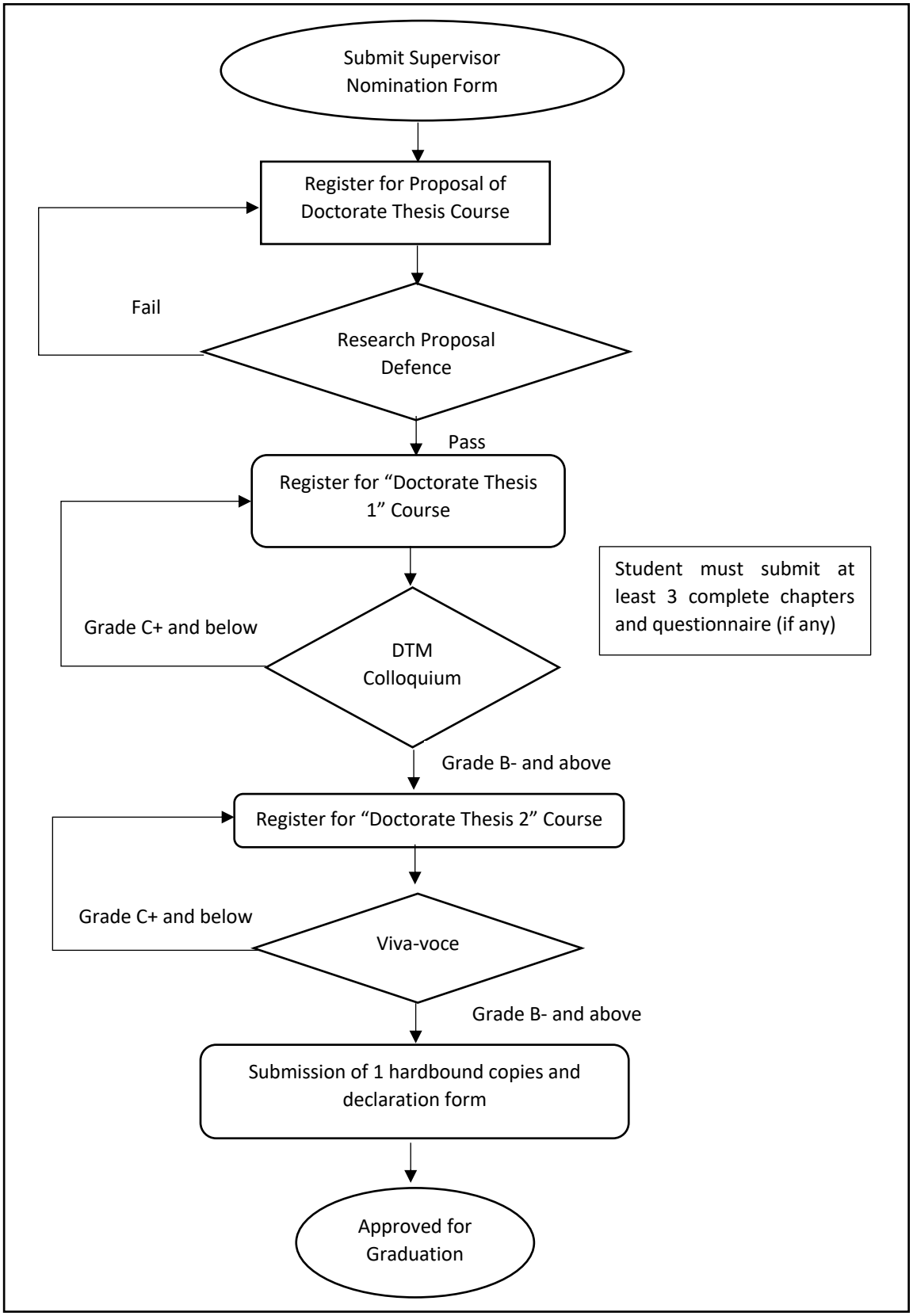


Figure 1: Doctorate thesis workflow

3.1 REGISTRATION FOR PROPOSAL OF DOCTORATE THESIS

Before registering for this subject, candidates must **propose a research title and potential supervisor** by completing the "**Supervisor Nomination Form**" (**Appendix 1**). The faculty will review this form in a formal meeting to evaluate the suitability of the proposed title and the alignment between the candidate's research interest and the expertise of the nominated supervisor. Where necessary, the faculty may recommend a more appropriate supervisor to ensure effective guidance and quality research supervision. This process is intended to align the candidate's research topic with the faculty's research clusters, available expertise, and strategic focus areas.

Once the proposed research title and nominated supervisor have been endorsed by the faculty, the candidate may proceed to register according to the program structure as follows:

PDTM 6410 – Proposal of Doctorate Thesis

In this course, candidates are required to prepare a comprehensive and scholarly research proposal that demonstrates originality, critical understanding, and potential contribution to the advancement of knowledge and practice in the field of Technology Management. The proposal serves as the foundation for the doctorate thesis and should reflect a well-developed analytical and conceptual approach.

The research proposal must demonstrate the candidate's ability to:

i. Identify the issues and problems which relevant with the organisation in the field of technology management and can be further as potential research ideas.
ii. Develop a well justified research context for the issues or problem undertaken.
iii. Construct a plan/method in a research proposal to resolve or look for solution through academic research for the empirical contribution and theoretical contribution.
iv. Demonstrate effective communication skills in presenting and defending research ideas, findings, and proposals using appropriate academic and digital platforms.

The structure of the proposal should generally consist of the following chapters:

i. **Introduction** – Provides an overview of the research background, problem statement, objectives, research questions, and significance of the study.
ii. **Literature Review** – Offers a comprehensive review of relevant theories, models, and empirical studies to establish a clear research gap.
iii. **Research Methodology** – Describes the research design, data collection methods, sampling techniques, analytical tools, and ethical considerations.

Candidates are strongly encouraged to **engage** actively with their appointed **supervisor** throughout the preparation process. Regular consultation and feedback sessions are essential to ensure that the proposal meets the required academic standards and aligns with the faculty's research expectations.

At the end of this course, candidates are required to **present** their **research proposal** before a Faculty Evaluation Panels. The presentation aims to assess the clarity, feasibility, and academic merit of the proposed research. The panels will evaluate the students based on the report evaluation rubric and presentation rubric as per Table 1 and Table 2 respectively. The panels will provide constructive feedback to refine and strengthen the proposal. Approval from the panel is compulsory before the candidate may proceed to the next stage of the doctoral journey, which involves conducting fieldwork, data collection, and subsequent doctorate thesis development. The Research Proposal Defence (RPD) will be conducted in accordance with the procedures stipulated in the Postgraduate Academic Regulations (PAR) 2023. The assessment outcome for this RPD shall be recorded as Hadir/Lulus.

Successful completion of PDTM 6410 marks a significant milestone in the doctoral program, as it confirms that the candidate possesses the necessary research foundation, methodological rigor, and scholarly orientation to undertake independent research at the doctoral level.

Table 1: Proposal of Doctorate Thesis evaluation rubric

CRITERIA	EVALUATION LEVEL (EL)				SCORE EL	WEIGHTAGE (W)	MARKS (EL X W)	Comments
	POOR (0~2)	FAIR (3~5)	GOOD (6~7)	EXCELLENCE (8~10)				
Thesis title (PLO1)	*Too general and wide- ranging making it difficult to manage and focus. Irrelevant with the scope of study.*	*General and not specific to the scope of study. Only cover part of the study.*	*More focused and addresses relevant aspects of the topic, but some terms could be improved to better reflect the scope of study.*	*Focused, and properly addresses the scope of study.*		**1**		
Problem statements (PLO1)	*Incomplete and insufficient explanation. Not defined very well. Not aligned with objectives and design of methodology.*	*Either not identified or not well defined. Not aligned either with objectives or design of methodology.*	*Clearly stated. However, partially aligned with objectives and design methodology.*	*Clearly defined. Aligned with objectives and design of methodology.*		**1**		
Research questions and research objectives (PLO1)	Demonstrates no or little ability to describe research objective and problem	Demonstrates a fair ability to describe research objective and problem.	Demonstrates a good ability to describe research objective and problem.	Demonstrates an excellent ability to describe research objective and problem.		**1**		

Table 1: Proposal of Doctorate Thesis report evaluation rubric (continue)

CRITERIA	EVALUATION LEVEL (EL)				SCORE EL	WEIGHTAGE (W)	MARKS (EL X W)	Comments
	POOR (0~2)	FAIR (3~5)	GOOD (6~7)	EXCELLENCE (8~10)				
Literature Review **(PLO2)**	Demonstrates no or little understanding of relevant literature.	Demonstrates a fair understanding of relevant literature.	Demonstrates a good understanding of relevant literature.	Demonstrates an excellent understanding of relevant literature.		**2**		
Research methodology **(PLO3)**	Demonstrates no or little knowledge of research and methods.	Demonstrates a fair knowledge of research and methods.	Demonstrates a good knowledge of research and methods.	Demonstrates an excellent knowledge of research and methods.		**2**		
Grammar, spelling, format and references **(PLO3)**	*Poor use of language. Many grammatical errors. Inconsistent format, irrelevant references, and/or references are not up to date.*	*Inappropriate use of language. Numerous grammatical errors. Inconsistent format, but relevant references and/or references are not up to date.*	*Clear and correct use of language. Few grammatical errors. Consistent format, relevant references and/or references up to date.*	*Clear and correct use of language. Extremely minimal grammatical errors. Consistent format and conforms to the required format, relevant references and references are up to date.*		**1**		
TOTAL =							/80	

Table 2: Proposal of Doctorate Thesis presentation rubric

LOD 10 (Entrepreneurial Skills) Proposal of Doctorate Thesis (PDTM 6410)

Criteria		1 - Worst	2 - Poor	3 - Satisfactory	4 - Good	5 - Very Good	Marks
Innovation, Opportunity Recognition & Impact This attribute assesses the candidate's ability to generate innovative ideas, identify real-world gaps or opportunities, and present a realistic and impactful plan for application, commercialization, or societal benefit.	**Thesis Title**	Too general and wide- ranging making it difficult to manage and focus. Irrelevant with the scope of study.	General and not specific to the scope of study. Only cover part of the study.	Still general but sufficiently addresses relevant aspects of the study	More focused and addresses relevant aspects of the topic, but some terms could be improved to better reflect the scope of study	Highly precise, innovative, and perfectly aligned with the scope of study.	
	Problem statements	Incomplete and insufficient explanation. Not defined very well. Not aligned with objectives and design of	Either not identified or not well defined. Not aligned either with objectives or design of	Clearly stated. However, partially aligned with objectives and design methodology.	Clearly defined. Aligned with objectives and design methodology	Clearly stated with critical analysis. Aligned with objectives and design of methodology	
	Research questions and research objectives	Demonstrates no or little ability to describe research objective and problem	Demonstrates a fair ability describe research objective and problem.	Demonstrates a good ability to describe research objective and problem.	Demonstrates strong ability to describe research objectives and problems.	Outstanding clarity, depth, and alignment with research goals.	
	Literature Review	No innovation or relevance to real-world problems; lacks awareness of industrial or societal needs; no application potential.	Limited novelty or vague understanding of problems and value creation; unrealistic or minimal practical application.	Shows some innovation and identifies a potential problem or opportunity; some mention of application, but lacks depth.	Demonstrates innovation, identifies relevant gaps, and discusses practical use with potential for scale-up or impact.	Presents a strong, original idea with clear industrial or societal relevance, compelling problem framing, and a detailed, scalable implementation or commercialization plan.	
LOD 10 (Entrepreneurial Skills) – TOTAL SCORE							0

Table 2: Proposal of Doctorate Thesis presentation rubric (continue)

LOD 8 (Leader / Autonomy / Responsibility) Proposal of Doctorate Thesis (PDTM 6410)

Criteria		1 - Worst	2 - Poor	3 - Satisfactory	4 - Good	5 - Very Good	Marks
Leadership and Initiative This attribute assesses the student's ability to take the lead in research planning and proposal development, demonstrating initiative and strategic direction.	**Research Methodology**	Shows no initiative or direction; lacks leadership completely.	Minimal leadership; hesitant to take initiative or set direction.	Takes initiative with some guidance; shows emerging leadership.	Leads parts of the research process with clarity and drive.	Demonstrates strong leadership, fully guiding the research or proposal with vision and strategic focus.	
Autonomy and Responsibility This attribute evaluates the student's level of independence, ownership of tasks, and proactive handling of research outcomes and decisions.	**Research Methodology**	Fully dependent on others; avoids responsibility or decision-making.	Needs frequent guidance; reluctant to take full ownership.	Works independently with some supervision; accepts responsibility inconsistently.	Works autonomously with minimal supervision; takes ownership of outcomes.	Fully autonomous and accountable, showing excellent independent judgment and proactive problem-solving.	
Collaboration and Feedback Management This attribute measures effectiveness in working with others and the ability to incorporate feedback constructively to enhance research quality.	**Research Methodology**	Does not collaborate or engage with feedback; communication is ineffective.	Struggles to collaborate or apply feedback meaningfully.	Participates in collaboration and accepts feedback, though with limited application.	Collaborates well and incorporates feedback thoughtfully.	Facilitates productive teamwork and communication; excels in applying feedback to refine research work.	
LOD 8 (Leader / Autonomy / Responsibility) – TOTAL SCORE							0

Table 2: Proposal of Doctorate Thesis presentation rubric (continue)

LOD 6 (Digital Skills) Proposal of Doctorate Thesis (PDTM 6410)

Criteria		1 - Worst	2 - Poor	3 - Satisfactory	4 - Good	5 - Very Good	Marks
Digital Presentation and Documentation of Work This attribute assesses the clarity, structure, formatting, and professionalism of digital outputs, including reports and presentations, with emphasis on visual effectiveness and use of media or graphics.	**Research Progress Report Presentation/Report**	Digital output is disorganized, unformatted, or unreadable; lacks clarity and professionalism.	Basic structure but with inconsistencies in format or presentation; clarity issues present.	Clear format and structure, though with minor visual or organizational flaws.	Well-structured and clearly presented digital work; formatting and visual design enhance readability.	Professionally documented and presented work; strong visual clarity, effective formatting, and meaningful use of graphics or media.	
	Use of Visuals, Design, and Engagement	Presentation lacks visuals or uses inappropriate, distracting, or irrelevant media.	Limited visuals; design is cluttered or not audience-friendly; visuals do not aid understanding.	Some relevant visuals or design elements are used but are basic or inconsistently applied.	Effective use of visuals and design elements that support understanding and improve readability; maintains audience interest.	Highly professional design; visuals and media are seamlessly integrated, creative, and strongly enhance audience engagement and message delivery.	
	Grammar, spelling, format and references	Very poor use of language. Excessive grammatical and spelling errors. Inconsistent and incorrect formatting. Irrelevant or missing references; references are not up to date.	Poor use of language. Many grammatical errors. Inconsistent format, irrelevant references, and/or references are not up to date.	Inappropriate use of language. Numerous grammatical errors. Inconsistent format, but relevant references and/or references are not up to date.	Clear and correct use of language. Few grammatical errors. Consistent format, relevant references and/or references up to date	Clear and correct use of language. Extremely minimal grammatical errors. Consistent format and conforms to the required format, relevant references and references are up to date.	
LOD 6 (Digital Skills) – TOTAL SCORE							0

3.2 REGISTRATION FOR DOCTORATE THESIS 1

After the proposal has been approved, students must register for:

PDTM 6510 – Doctorate Thesis 1

This stage focuses on refining and implementing the approved research plan. Under the supervision of appointed faculty members, students will begin comprehensive data collection preparations and further strengthen the depth of their theoretical and conceptual foundation. This stage serves as the bridge between proposal approval and full-scale research implementation.

Key activities at this stage include:

i. **Refining the research framework**, research questions, and hypotheses (if applicable).
ii. **Developing and finalizing data collection instruments**, obtaining necessary ethical approval, and initiating data collection activities according to the approved methodology.
iii. **Preparing at least three completed chapters** of the doctorate thesis 1; Introduction, Literature Review, and Research Methodology.
iv. **Demonstrating progress in data collection**, including documentation of fieldwork activities, preliminary data summaries, or sample datasets to show that the research is being carried out as planned.
v. **Submission of progress reports** comprising Chapters 1, 2, and 3 to the supervisor at the end of the semester.
vi. **Participating in a Doctoral Colloquium**, which is a compulsory requirement at this stage. The colloquium provides an academic platform for students to present and discuss their research progress, particularly in data collection and methodological implementation. Additionally, students will receive feedback from peers and faculty members and enhance the quality and direction of their study before entering the data analysis phase.

The research proposal must demonstrate the candidate's ability to:

i. Justify research problems, questions, and objectives aligned with organizational issues in technology management.
ii. Propose conceptual framework and identify the research gaps.
iii. Demonstrate professionalism and effective communication in conducting ethical data collection and engagement with research participants.
iv. Exhibit professional and ethical responsibility in conducting and presenting research proposals aligned with institutional and academic integrity standards.

At the end of this course, students are required to present their progress and preliminary findings to the Doctoral Colloquium Panels. This presentation serves as an important checkpoint to evaluate research progress, including data collection achievements, alignment with objectives, methodological soundness, and readiness to proceed to the data analysis stage. The panels will evaluate the students based on the report evaluation rubric and presentation rubric as per Table 3 and Table 4 respectively. The assessment for Doctorate Thesis 1 shall be conducted in accordance with the grading system stipulated in PAR 2023.

If the panels are satisfied with the progress and quality of work, students may proceed to **PDTM 6610 – Doctorate Thesis 2**. If the panels identify major issues or weaknesses, students will be required to make necessary revisions and improvements before progression.

Table 3: Doctorate Thesis 1 report evaluation rubric

A. CONTENT (65%)						
	Criteria	**Score**				
		Poor	**Fair**	**Satisfactory**	**Very Good**	**Excellent**
	1. ABSTRACT					
	Present major components that include overall purpose, research problem and methodology.	1	2	3	4	5
	2. INTRODUCTION					
	Present clear description of research background.	1	2	3	4	5
	Clear presentation of issues to be studied.	1	2	3	4	5
	3. PROBLEM STATEMENT					
	Clear discussion on problem statement and able to define the research gap.	1	2	3	4	5
	4. RESEARCH OBJECTIVES & RESEARCH QUESTIONS					
	Research questions are clearly stated.	1	2	3	4	5
	Research objectives are able to answer research questions.	1	2	3	4	5
	5. LITERATURE REVIEW					
	Provide comprehensive and relevant sources of literature	1	2	3	4	5
	Literature provided are current within the last 5 years.	1	2	3	4	5
	Present good organization of themes in literature review.	1	2	3	4	5
	6. METHODOLOGY					
	Research design are clearly written.	1	2	3	4	5
	Data collection method is clearly explained and presented.	1	2	3	4	5

	7.CONCLUSION					
	a) Good discussion leading to the relevance of current project.	1	2	3	4	5
	b) Provide suggestion for future research.	1	2	3	4	5
	Total = (a+b)/10 x 5					
	8. REFERENCES					
	Most reference sources are recent with a combination of books and journals.	1	2	3	4	5
	Reliable and valid references are used in the report.	1	2	3	4	5
	Total = (a+b)/10 x 5					

B. WRITING FORMAT (15%)						
	Criteria	**Score**				
		Poor	**Fair**	**Satisfactory**	**Very Good**	**Excellent**
	1. REPORT ARRANGEMENT					
	Report includes all relevant sections are organized in an orderly manner.	1	2	3	4	5
	2. LANGUAGE					
	Clear and easy to understand and with minimal spelling or grammatical errors.	1	2	3	4	5
	3. FORMATTING					
	All of the required components are present and follow the standard format. (APA/Harvard format)	1	2	3	4	5

Table 4: Doctorate Thesis 1 presentation rubric

LOD 10 (Entrepreneurial Skills) Doctorate Thesis 1

Criteria		1 - Worst	2 - Poor	3 - Satisfactory	4 - Good	5 - Very Good	Marks
Innovation, Opportunity Recognition & Impact This attribute assesses the candidate's ability to generate innovative ideas, identify real-world gaps or opportunities, and present a realistic and impactful plan for application, commercialization, or societal benefit.	**Thesis Title**	Too general and wide-ranging making it difficult to manage and focus. Irrelevant with the scope of study.	General and not specific to the scope of study. Only cover part of the study.	Still general but sufficiently addresses relevant aspects of the study	More focused and addresses relevant aspects of the topic, but some terms could be improved to better reflect the scope of study	Highly precise, innovative, and perfectly aligned with the scope of study.	
	Problem statements	Incomplete and insufficient explanation. Not defined very well. Not aligned with objectives and design of	Either not identified or not well defined. Not aligned either with objectives or design of	Clearly stated. However, partially aligned with objectives and design methodology.	Clearly defined. Aligned with objectives and design methodology	Clearly stated with critical analysis. Aligned with objectives and design of methodology	
	Research questions and research objectives	Demonstrates no or little ability to describe research objective and problem	Demonstrates a fair ability describe research objective and problem.	Demonstrates a good ability to describe research objective and problem.	Demonstrates strong ability to describe research objectives and problems.	Outstanding clarity, depth, and alignment with research goals.	
	Literature Review	No innovation or relevance to real-world problems; lacks awareness of industrial or societal needs; no application potential.	Limited novelty or vague understanding of problems and value creation; unrealistic or minimal practical application.	Shows some innovation and identifies a potential problem or opportunity; some mention of application, but lacks depth.	Demonstrates innovation, identifies relevant gaps, and discusses practical use with potential for scale-up or impact.	Presents a strong, original idea with clear industrial or societal relevance, compelling problem framing, and a detailed, scalable implementation or commercialization plan.	
LOD 10 (Entrepreneurial Skills) – TOTAL SCORE							0

Table 4: Doctorate Thesis 1 presentation rubric (continue)

LOD 8 (Leader / Autonomy / Responsibility) Doctorate Thesis 1

Criteria		1 - Worst	2 - Poor	3 - Satisfactory	4 - Good	5 - Very Good	Marks
Leadership and Initiative This attribute assesses the student's ability to take the lead in research planning and proposal development, demonstrating initiative and strategic direction.	**Research Methodology**	Shows no initiative or direction; lacks leadership completely.	Minimal leadership; hesitant to take initiative or set direction.	Takes initiative with some guidance; shows emerging leadership.	Leads parts of the research process with clarity and drive.	Demonstrates strong leadership, fully guiding the research or proposal with vision and strategic focus.	
Autonomy and Responsibility This attribute evaluates the student's level of independence, ownership of tasks, and proactive handling of research outcomes and decisions.	**Research Methodology**	Fully dependent on others; avoids responsibility or decision-making.	Needs frequent guidance; reluctant to take full ownership.	Works independently with some supervision; accepts responsibility inconsistently.	Works autonomously with minimal supervision; takes ownership of outcomes.	Fully autonomous and accountable, showing excellent independent judgment and proactive problem-solving.	
Collaboration and Feedback Management This attribute measures effectiveness in working with others and the ability to incorporate feedback constructively to enhance research quality.	**Research Methodology**	Does not collaborate or engage with feedback; communication is ineffective.	Struggles to collaborate or apply feedback meaningfully.	Participates in collaboration and accepts feedback, though with limited application.	Collaborates well and incorporates feedback thoughtfully.	Facilitates productive teamwork and communication; excels in applying feedback to refine research work.	
LOD 8 (Leader / Autonomy / Responsibility) – TOTAL SCORE							0

Table 4: Doctorate Thesis 1 presentation rubric (continue)

LOD 6 (Digital Skills) Doctorate Thesis 1

Criteria		1 - Worst	2 - Poor	3 - Satisfactory	4 - Good	5 - Very Good	Marks
Utilisation of Digital Tools for Research, Analysis, and Information Sourcing This attribute evaluates the candidate's ability to effectively select and apply digital tools for advanced research tasks, and to source, assess, and synthesize credible digital information.	**Data Analysis**	No or inappropriate use of digital tools; relies on outdated methods and lacks credible sources.	Minimal use of digital tools; mostly manual or outdated; sources lack credibility or relevance.	Uses common tools (e.g., Excel, Google Scholar) with some issues; sources are acceptable but lack depth.	Effective and appropriate use of tools for research and analysis; credible and relevant sources with reasonable evaluation.	Expert and strategic use of advanced tools; extensive use of credible, up-to-date sources with critical evaluation.	
Digital Presentation and Documentation of Work This attribute assesses the clarity, structure, formatting, and professionalism of digital outputs, including reports and presentations, with emphasis on visual effectiveness and use of media or graphics.	**Research Progress Report Presentation/ Report**	Digital output is disorganized, unformatted, or unreadable; lacks clarity and professionalism.	Basic structure but with inconsistencies in format or presentation; clarity issues present.	Clear format and structure, though with minor visual or organizational flaws.	Well-structured and clearly presented digital work; formatting and visual design enhance readability.	Professionally documented and presented work; strong visual clarity, effective formatting, and meaningful use of graphics or media.	
	Grammar, spelling, format and references	Very poor use of language. Excessive grammatical and spelling errors. Inconsistent and incorrect formatting. Irrelevant or missing references; references are not up to date.	Poor use of language. Many grammatical errors. Inconsistent format, irrelevant references, and/or references are not up to date.	Inappropriate use of language. Numerous grammatical errors. Inconsistent format, but relevant references and/or references are not up to date.	Clear and correct use of language. Few grammatical errors. Consistent format, relevant references and/or references up to date	Clear and correct use of language. Extremely minimal grammatical errors. Consistent format and conforms to the required format, relevant references and references are up to date.	
LOD 6 (Digital Skills) – TOTAL SCORE							0

Table 4: Doctorate Thesis 1 presentation rubric (continue)

LOD 9 (Personal skills) Doctorate Thesis 1

Criteria		1 - Worst	2 - Poor	3 - Satisfactory	4 - Good	5 - Very Good	Marks
Self-Management, Interpersonal Effectiveness, and Ethical Conduct This attribute assesses the candidate's ability to manage time and responsibilities effectively, demonstrate professionalism in communication and collaboration, and uphold high ethical standards with resilience and adaptability.	**Management**	Consistently misses deadlines; no initiative; disorganized.	Frequently misses deadlines; minimal planning; relies on reminders.	Manages time reasonably; meets most deadlines with some effort.	Consistently meets deadlines; self-motivated; plans effectively.	Exemplary time management; proactive; optimizes workflows strategically.	
	Communication	Demonstrates no or little ability to present orally the proposed dissertation research.	Demonstrates limited ability to present orally the proposed dissertation research. Presentation lacks clarity or logical flow; several key elements are missing or poorly explained.	Demonstrates a fair ability to present orally the proposed dissertation research	Demonstrates a good ability to present orally the proposed dissertation research.	Demonstrates an excellent ability to present orally the proposed dissertation research.	
	Ethical Conduct	Disregards ethics; violates rules; resists accountability.	Occasional lapses; follows standards only when monitored.	Generally ethical but may need guidance on complex situations.	Committed to integrity; upholds standards consistently.	Role model for ethics; advocates for fairness and transparency.	
LOD 9 (Personal Skills) – TOTAL SCORE							0

.3 REGISTRATION FOR DOCTORATE THESIS 2

After satisfactory progress in Doctorate Thesis 1, students will register for:

PDTM 6612 – Doctorate Thesis 2

This is the final and culminating stage of the doctoral research journey. At this phase, candidates are expected to demonstrate advanced research capability, critical analysis, and scholarly independence in completing their doctorate thesis. The focus of this stage is on data analysis, interpretation of findings, discussion, conclusion, and preparation for the Viva Voce (oral defense).

Students are required to integrate theoretical knowledge with empirical findings to produce a coherent, high-quality doctorate thesis that makes an original and meaningful contribution to the field of Technology Management.

Main activities during this stage include:

i. Completion of data collection (if still ongoing) and conducting comprehensive data analysis using appropriate statistical, qualitative, or mixed-method tools and techniques.

ii. Interpreting findings in relation to research objectives, hypotheses, and theoretical frameworks.

iii. Writing the remaining chapters of the doctorate thesis, which generally include:
   - Data Analysis and Finding
   - Discussion and Implications
   - Conclusion and Recommendations

iv. Ensuring that the doctorate thesis demonstrates coherence, logical flow, and academic rigor, while reflecting mastery of research design and analytical reasoning.

v. Preparing a complete and polished full doctorate thesis draft for supervisor review and obtaining formal approval prior to submission for examination.

vi. Participating in doctorate thesis review meetings, progress presentations, or mock viva sessions organized by the faculty to assess readiness for the final defense.

The research proposal must demonstrate the candidate's ability to:

i. Evaluate data analysis using appropriate analytical tools and techniques to derive valid, reliable, and meaningful research findings.

ii. Construct and refine the final empirical and analytical chapters of the Doctoral Thesis, demonstrating coherence, scholarly depth, and methodological rigor.

iii. Integrate empirical evidence and theoretical insights to establish significant contributions to knowledge, advancing both theory and practice in the chosen field of study.

iv. Exhibit professional and ethical responsibility in conducting and presenting research findings aligned with institutional and academic integrity standards.

Upon completion of the doctorate thesis writing process, students are required to undergo a Viva Voce (Oral Defense) — the final evaluation component of the doctoral program.

During the Viva Voce session:

i. Students will present their entire research work, summarizing the background, objectives, methodology, key findings, theoretical contributions, and practical implications.

ii. The Evaluation Panel, typically consisting of the Chairperson, Supervisors, Internal Examiner(s), and an External Examiner, will assess the candidate's:
   - Depth of understanding of the research topic and related literature.
   - Originality and contribution to knowledge or practice.
   - Ability to defend methodological choices, interpretation of results, and implications of findings.

iii. The viva presentation shall be conducted in the presence of the Chairperson, Supervisor, Internal Examiner, and External Examiner. This will be followed by an in-depth Question and Answer (Q&A) session, during which candidates are required to justify their academic reasoning, analytical decisions, and research conclusions.

The appointment of the examiners and Chairperson shall be made in accordance with the requirements stipulated in PAR 2023. Following the Viva Voce, the panel shall assess the candidate using the Doctorate Thesis 2 Examiner's report rubric (Table 5), and the final grade shall be determined from the average score.

All corrections must be completed in accordance with Faculty and University guidelines, under the supervision of the main supervisor. The correction duration is based on PAR 2023 and depicted in Table 6. Once all revisions have been endorsed, the candidate will proceed with final doctorate thesis submission and degree conferment processes.

This final stage signifies the culmination of the candidate's doctoral research journey, demonstrating scholarly excellence, research integrity, and the ability to contribute new insights to the discipline of Technology Management.

Table 5: Doctorate Thesis 2 examiner's report rubric

Component of Assessment	PLO	Weightage (%)	Comments	Score	Total Score	1 (Not Satisfactory)	2 (Somewhat Satisfactory)	3 (Satisfactory)	4 (Good)	5 (Excellent)
Dissertation Assessment Rubric										
A. Robustness of Dissertation										
1) Dissertation Title Reflects the contents of the research	PLO5	3		5	3	The title does not reflect the research	The title only partially reflects the research	The title generally reflect the research	The title clearly reflects the research	The title exceptionally reflects the research
2) Abstract Describes the research context, methodological approach, research process, and key conclusions	PLO5	3		5	3	Fails to adequately describe the research context, methodology, process, and conclusions	Includes limited or unclear information about the research context, methodology, process, and conclusions	Addresses the main components, but some elements (context, method, process, or conclusions) lack clarity or sufficient detail.	Describes the research context, methodology, process, and conclusions clearly, with only minor omissions or lack of emphasis.	Clearly and comprehensively describes the research context, methodological approach, research process, and key conclusions in a concise and coherent manner.
3) Problem Statement Relevant issues and challenges are identified and summarized	PLO6	5		5	5	Relevant issues and challenges are not adequately identified or summarized. justification of research	Issues and challenges are partially identified and poorly summarized, requiring substantial improvement.	Issues and challenges are identified and summarized, but clarity, completeness, or depth is limited.	Relevant issues and challenges are clearly identified and well summarized	Relevant issues and challenges are comprehensively identified and clearly summarized, demonstrating strong understanding and critical insight.

Table 5: Doctorate Thesis 2 examiner's report rubric (continue)

Component of Assessment	PLO	Weightage (%)	Comments	Score	Total Score	1 (Not Satisfactory)	2 (Somewhat Satisfactory)	3 (Satisfactory)	4 (Good)	5 (Excellent)
A. Robustness of Dissertation										
4) Research Objectives & Research Questions Aligned with the research problems and well written	PLO5	2		5	2	Research objectives and research questions are not aligned with the research problems and are inadequately written.	Research objectives and research questions show limited alignment with the research problems and are poorly written or unclear.	Research objectives and research questions show general alignment with the research problems but lack clarity, precision, or coherence in some areas.	Research objectives and research questions are well aligned with the research problems and are clearly written	Research objectives and research questions are clearly aligned with the research problems and are exceptionally well written
5) Scope of Research Adequate for the doctorate level and clearly states the limitations of the study	PLO5	2		5	2	The research scope is inappropriate for the doctorate level and fails to clearly state the study's limitations	The research scope limited or not fully appropriate for the doctorate level, and study's limitations a unclear or insufficie stated	The research scope is generally adequate for the doctorate level, but the limitations are stated briefly or lack clarity	The research scope is appropriate for the doctorate level and states the study's limitations clearly	The scope of the research is fully appropriate for the doctorate level and clearly and explicitly states the study's limitations, demonstrating strong academic rigor
6) Literature Review Relevant, provides critical review and comprehensive	PLO6	5		5	5	Largely irrelevant, descriptive rather than critical, and lacks comprehensive coverage	Limited relevance, minimal critical evaluation, and lacks comprehensive coverage	Moderately relevance, minimal critical evaluation, and lacks comprehensive coverage	Relevant and provides a clear critical review, with comprehensive coverage	Highly relevant, provides a strong and insightful critical review, with comprehensive coverage

Table 5: Doctorate Thesis 2 examiner's report rubric (continue)

Component of Assessment	PLO	Weightage (%)	Comments	Score	Total Score	1 (Not Satisfactory)	2 (Somewhat Satisfactory)	3 (Satisfactory)	4 (Good)	5 (Excellent)
A. Robustness of Dissertation										
7) Research Methodology Appropriate research design and choice of methods	PLO4	10		5	10	The research design and choice of methods are inappropriate or not clearly explained	The research design or choice of methods is partially appropriate and insufficiently justified	The research design and methods are generally appropriate, but the justification or alignment lacks clarity or depth	The research design is appropriate and the choice of methods is clearly explained, with only minor limitations	The research design is highly appropriate and the choice of methods is well justified, clearly aligned with the research objectives and questions
8) Results & Discussion -The findings are accurately reported based on the data and discussed rigorously -Appropriate statistical analyses are employed where required. -The findings are clearly linked to the research questions and relevant theoretical frameworks. -The topic is critically analysed with depth and insight.	PLO6	10		5	10	Findings are inaccurate or poorly discussed, analyses are inappropriate or absent, and no meaningful linkage to research questions or theory is evident	Findings and discussion are limited or unclear, analyses are weak or inappropriate, and links to research questions and theory are minimal	Findings are generally accurate and discussed adequately, with acceptable analyses and some linkage to research questions and theory	Findings are accurately reported and well discussed, analyses are appropriate, and links to research questions and theory are clearly established	Findings are accurately reported and rigorously discussed, appropriate analyses are applied, and results are clearly linked to research questions and theory with strong critical insight
9) Conclusion & Recommendation The significance of the research findings is clearly demonstrated, and recommendations for future research to address identified gaps are provided.	PLO6	10		5	10	The significance of the research findings is not clearly demonstrated, and recommendations for future research are absent or inappropriate.	The significance of the research findings is weakly articulated, and recommendations for future research are limited or poorly aligned with identified gaps.	The significance of the research findings is generally explained, and recommendations for future research are provided but lack depth or clarity.	The significance of the research findings is clearly demonstrated, with relevant recommendations for future research to address identified gaps.	The significance of the research findings is clearly and convincingly demonstrated, and well-founded recommendations for future research effectively address identified gaps.

Table 5: Doctorate Thesis 2 examiner's report rubric (continue)

Component of Assessment	PLO	Weightage (%)	Comments	Score	Total Score	1 (Not Satisfactory)	2 (Somewhat Satisfactory)	3 (Satisfactory)	4 (Good)	5 (Excellent)
A. Robustness of Dissertation										
10) References Relevant and up-to-date references	PLO5	6		5	6	References are largely irrelevant, outdated, or insufficient in number	References show lir relevance or rely he on outdated source	References are generally relevant but include a limited number of recent sources or show moderate coverage	References are relevant and mostly up to date, with only minor gaps in coverage or recency	References are highly relevant, current, and comprehensive, demonstrating strong engagement with up-to-date scholarly sources
11) Writing Style & Grammar The writing is professional, uses appropriate scholarly style and formatting, and is free from typographical, grammatical, and spelling errors	PLO5	6		5	6	The writing is unprofessional, does not follow scholarly conventions, and contains many typographical, grammatical, and spelling errors.	The writing lacks consistent professionalism, shows poor scholarly style or formatting, and contains frequent language errors.	The writing is generally professional, but scholarly style, formatting, or language accuracy shows noticeable weaknesses	The writing is professional and uses appropriate scholarly style and formatting, with only minor and infrequent errors that do not affect clarity	The writing is consistently professional, demonstrates appropriate scholarly style and formatting, and is free from typographical, grammatical, and spelling errors
12) Logical coherence and structural flow of the dissertation Exhibits clear and smooth structural flow throughout the dissertation.	PLO5	6		5	6	The dissertation is poorly organized, lacks logical coherence, and demonstrates little or no structural flow	The dissertation lacks consistent logical coherence and has noticeable problems in structure and flow	The dissertation shows adequate logical coherence, but the structural flow is uneven or occasionally unclear	The dissertation demonstrates clear logical coherence and a generally smooth structural flow, with only minor organizational issues	The dissertation exhibits exceptional logical coherence with a clear, well-organized, and smoothly flowing structure throughout

Table 5: Doctorate Thesis 2 examiner's report rubric (continue)

Component of Assessment	PLO	Weightage (%)	Comments	Score	Total Score	1 (Not Satisfactory)	2 (Somewhat Satisfactory)	3 (Satisfactory)	4 (Good)	5 (Excellent)
B. Quality of Dissertation										
1) Data Analysis & Interpretation Demonstrates the richness of data, evidence, or ideas in an ethical and professional manner	PLO4	10		5	10	Fails to demonstrate meaningful analysis or interpretation of data, evidence, or ideas, and does not adhere to ethical or professional standards	Demonstrates limited analysis or interpretation of data or evidence, with weaknesses in ethical or professional presentation	Demonstrates adequate analysis and interpretation of data or evidence, with acceptable ethical and professional presentation	Demonstrates clear and meaningful analysis of data, evidence, or ideas, presented ethically and professionally with minor limitations	Demonstrates rich, insightful analysis and interpretation of data, evidence, or ideas, presented ethically and professionally with strong scholarly rigor
2) Depth of Overall Discussion Demonstrates strong knowledge of the field of study, and the research design, with well-supported arguments that are critically compared against alternative or conflicting explanations.	PLO4	7		5	7	Demonstrates insufficient knowledge of the field and research design, with poorly supported arguments and no meaningful comparison with alternative explanations.	Demonstrates limited knowledge of the field or research design, with weakly supported arguments and minimal consideration of alternative explanations.	Demonstrates adequate knowledge of the field and research design, with arguments that are supported but show limited critical comparison with alternative explanations.	Demonstrates strong knowledge of the field and research design, with well-supported arguments and clear consideration of alternative explanations.	Demonstrates exceptional knowledge of the field of study and research design, with well-supported arguments that are critically and convincingly compared against alternative or conflicting explanations.
3) Originality of the research Demonstrates originality in the research and makes a significant theoretical, methodological, or practical contribution that is of major importance and clearly relevant to the field of study	PLO6	15		5	15	Lacks originality and does not make a meaningful theoretical, methodological, or practical contribution to the field of study.	Demonstrates limited originality and makes a minor or unclear contribution to the field of study.	Demonstrates some originality and makes a modest contribution to theory, methodology, or practice, with limited significance to the field.	Demonstrates clear originality and makes a meaningful theoretical, methodological, or practical contribution that is relevant to the field of study.	Demonstrates outstanding originality and makes a highly significant theoretical, methodological, or practical contribution that is of major importance and clearly advances the field of study.

Table 5: Doctorate Thesis 2 examiner's report rubric (continue)

Component of Assessment	PLO	Weightage (%)	Comments	Score	Total Score	1 (Not Satisfactory)	2 (Somewhat Satisfactory)	3 (Satisfactory)	4 (Good)	5 (Excellent)
Presentation Assessment Rubric										
C. Delivery of Presentation										
1) Time Management and Preparedness	PLO7	10		5	10	Unprepared and unable to manage time or presentation flow	Poor preparation with ineffective time management	Adequately prepared but shows some weaknesses in time control or organization	Well prepared and manages time effectively with minor lapses	Demonstrates full autonomy and exemplary preparation; manages time precisely and responds to the viva with confidence and structure
2) Professional Cimmunication and Demeanor	PLO7	10		5	10	Communication is ineffective and inappropriate for doctoral level	Communication is unclear, informal, or unprofessional at times	Communication is generally clear but lacks consistency or scholarly polish	Communicates professionally and clearly with minor issues in delivery or confidence	Communicates with high-level professionalism, clarity, and scholarly maturity expected of an independent doctoral researcher
D. Research Comprehension										
1) Analysis is appropriate, complete and clear.	PLO4	5		5	5	Analysis is inappropriate, incomplete, and unclear.	Analysis is partially appropriate but lacks completeness and clarity.	Analysis is appropriate and generally clear, though some aspects lack depth.	Analysis is appropriate, complete, and clearly presented.	Analysis is highly appropriate, fully complete, and exceptionally clear.

Table 5: Doctorate Thesis 2 examiner's report rubric (continue)

Component of Assessment	PLO	Weightage (%)	Comments	Score	Total Score	1 (Not Satisfactory)	2 (Somewhat Satisfactory)	3 (Satisfactory)	4 (Good)	5 (Excellent)
D. Research Comprehension										
2) Result is accurately stated based on the data.	PLO4	5		5	5	Results are inaccurate or not supported by the data.	Results are partially accurate with limited data support.	Results are generally accurate and reasonably supported by the data.	Results are accurate and clearly supported by the data.	Results are precise, fully accurate, and strongly substantiated by the data.
3) Present thoughtful, detailed and comprehensive discussion.	PLO7	10		5	10	Discussion is superficial, unclear, or absent.	Discussion shows limited depth and lacks coherence.	Discussion is adequate and covers key aspects of the study	Discussion is thoughtful, detailed, and well-developed.	Discussion is highly insightful, comprehensive, and demonstrates critical depth.
4) Key findings are discussed with previous research.	PLO6	5		5	5	Key findings are not linked to previous research.	Limited reference to previous research with weak integration.	Key findings are discussed with some reference to previous studies.	Key findings are clearly discussed and well-linked to previous research	Key findings are critically and comprehensively integrated with previous research.
5) Clear link between research questions and conclusions which are substantiated by results.	PLO6	5		5	5	No clear link between research questions, results, and conclusions.	Weak linkage between research questions and conclusions.	Clear linkage, though justification using results is limited.	Strong linkage between research questions and conclusions supported by results.	Excellent and coherent linkage clearly substantiated by robust results.
6) Recommendations are relevant and well-linked to the conclusions.	PLO6	5		5	5	Recommendations are irrelevant or not linked to conclusions	Recommendations are weakly related to conclusions.	Recommendations are relevant but linkage to conclusions is moderate.	Recommendations are relevant and clearly linked to conclusions.	Recommendations are highly relevant, well-justified, and strongly linked to conclusions.

Table 5: Doctorate Thesis 2 examiner's report rubric (continue)

Component of Assessment	PLO	Weightage (%)	Comments	Score	Total Score	1 (Not Satisfactory)	2 (Somewhat Satisfactory)	3 (Satisfactory)	4 (Good)	5 (Excellent)
E. Result of Research										
1) Research objectives are met and clearly explained	PLO5	10		5	10	objectives are met and clearly explained Research objectives are not met and poorly explained.	Research objectives are partially met with unclear explanation.	Research objectives are generally met and adequately explained.	Research objectives are clearly met and well explained.	Research objectives are fully achieved and exceptionally well articulated.
2) Meet the scope of research with accurate explanation	PLO5	5		5	5	Research scope is not met and explanation is inaccurate.	Research scope is partially met with limited accuracy.	Research scope is met with generally accurate explanation	Research scope is clearly met with accurate and coherent explanation.	Research scope is fully met with precise, comprehensive, and accurate explanation.
F. Respond to Q&A										
1) Interaction with Examiners (Q&A)	PLO5	10		5	10	Interaction is inappropriate, dismissive, or ineffective	Interaction is weak, defensive, or unclear	Responds adequately but with limited depth or confidence	Responds respectfully and appropriately, with clear engagement	Engages respectfully and confidently; demonstrates intellectual leadership and collegial discourse when responding to examiners
2) Ethical Awareness and Academic Integrity	PLO4	10		5	10	Fails to demonstrate ethical awareness or academic integrity	Ethical awareness is weak or inconsistently demonstrated	Shows basic ethical understanding with limited articulation	Demonstrates clear ethical awareness and academic integrity	Demonstrates strong ethical judgment, academic integrity, and responsibility consistent with Level 8 scholarly standards
3) Emotional Quotient (EQ), Resilience and Adaptability	PLO7	10		5	0	Unable to manage stress, criticism, or adapt during the viva	Struggles to regulate emotions or adapt to questioning	Manages stress adequately but shows signs of difficulty under pressure	Maintains composure and adapts well to challenging questions	Demonstrates exceptional emotional control, resilience, and adaptability under rigorous questioning and critique

Table 6: Specification of Grade Range

SPECIFICATION OF GRADE RANGE		
GRADE RECOMMENDATION	**MARKS RANGE**	**CORRECTION DURATION**
PASS WITHOUT AMENDMENT	90 - 100	NOT EXCEEDING 3 MONTHS
PASS WITH MINOR AMENDMENT	80-89	1 - 6 MONTHS
PASS WITH MAJOR AMENDMENT	65-79	3 - 9 MONTHS
RE-EXAMINATION	50-64	9 - 12 MONTHS
FAIL	0-49	DISMISSED FROM THE PROGRAM

3.4 FINAL DOCTORATE THESIS SUBMISSION AND EVALUATION

After successfully defending their viva, students must submit the **corrected and finalized doctorate thesis** in both softcopy and hardbound formats along with the **Thesis Declaration Form**.

The following requirements must be met:

- **Similarity Index** (Turnitin report) must be **below 25%**.
- Thesis length: At least **50,000 words**
- Submission must adhere to **UTeM formatting and referencing guidelines** (APA latest edition).

Evaluation is based on:

- **Supervisor Evaluation** – 50%
- **Examiner Evaluation** – 50%
- **Total** – 100%

3.5 DOCTOR OF TECHNOLOGY MANAGEMENT AWARD

Students who have:

Completed all required DTM coursework,

Successfully defended their research in the Viva Voce, and submitted the final corrected hardbound doctorate thesis are eligible to be conferred the Doctor of Technology Management (DTM) degree.

Before graduation, students must complete all necessary documentation, including the Application for Graduation and Transcript Request Form, and ensure clearance from the library and finance departments.

GUIDELINES FOR THE PREPARATION OF DOCTORATE THESIS FOR DOCTOR OF TECHNOLOGY MANAGEMENT (DTM) PROGRAMME

GUIDELINE 1: SUBMISSION OF DOCTORATE THESIS FOR EVALUATION/EXAMINATION

1.0 INTRODUCTION

This Guideline is prepared and designed to assist DTM students of **Faculty of Technology Management and Technopreneurship (FPTT)** in the preparation of their doctorate thesis. It deals only with the submission and the physical format and writing conventions of the doctorate thesis. It is the responsibility of each student to ensure that his/her work conforms to the guidelines set out below. Further clarification of the guidelines can be obtained from the School of Graduate Studies (SPS). In this Guideline, the word "thesis" applies to the DTM doctorate thesis.

1.1 SUBMISSION OF DOCTORATE THESIS FOR EVALUATION / EXAMINATION

The title of the doctorate thesis must have prior approval for submission from the supervisor(s) and the respective faculties. The following procedures must be followed when submitting a doctorate thesis for evaluation / examination:

1.1.1 For DTM doctorate thesis, candidates should notify SPS in writing at least **three (3) months** before they intend to submit their research work. Notification forms for doctorate thesis submission are available from SPS.

1.1.2 Candidates must submit **one (1) draft** copy of the doctorate thesis to his/her supervisor before submitting the final copies, to ensure that the proper format has been followed before the copies are sent for examination. **The draft copy should be accompanied with a TURNITIN report and AI similarity index (e.g. Grammarly).**

1.1.3 The title should be a short and concise description of the main content of the thesis and should not exceed 15 words. Redundancies such as "An investigation of …", "A preliminary study of …", "On the…" "Theory of …", "Some of …" and "Toward a …" must be avoided.

Doctorate thesis title should not contain formulas, symbols or subscripts, Greek letters, or other non-alphabetical symbol such as bracket; rather word substitutes are used.

1.1.4 Length of doctorate thesis is at least 50 000 words. The total number of words only accounts for the main text and does not include footnotes, exhibits, figures, tables, graphs, appendices, bibliographies and references.

1.1.5 Examiners should be reminded of the differences between a DTM doctorate thesis and a PhD thesis to ensure that their expectations are aligned with the appropriate level of academic work and not set higher than necessary. Table 1.1 shows examples of the differences between PhD thesis, DBA dissertation and DTM dissertation.

Table 1.1: The differences between PhD thesis, DBA dissertation and DTM dissertation.

Description	PhD Thesis	DBA Dissertation	DTM Dissertation
Core Purpose of Dissertation	To generate original theoretical knowledge and make a significant scholarly contribution to the discipline.	To solve complex real-world business problems through rigorous applied research.	To address technology management problems through rigorous applied research.
Nature of Contribution	Primarily theoretical contribution (theory building, extension, or testing).	Primarily practical and managerial contribution, with limited theory extension.	Primarily practical solutions for technology-based organisations.
Problem Context	Often abstract, conceptual, or discipline-driven.	Organisation-specific or industry-based business problems.	Real-world technology-intensive organisational issues, often linked to innovation, digitalisation, or technology strategy.
Research Orientation	Strongly academic and exploratory/explanatory.	Practice-led and problem-driven.	Applied, problem-driven or strategic management research.
Methodologic al Rigor	Very high; emphasis on methodological originality and robustness.	High, but methods are selected mainly for practical relevance.	High; but methods are selected mainly for practical relevance. Appropriate to technology management research.
Structure of Dissertation	Conventional PhD structure (Introduction, Literature Review, Methodology, Findings, Discussion, Conclusion).	• May follow a problem–solution or consultancy-style structure, depending on institution.	• Structured dissertation completed in stages: Doctorate Thesis 1 (Chapters 1–3) and Doctorate Thesis 2 (Chapters 4–5).
Doctorate Thesis Staging	Usually continuous thesis development.	Continuous, sometimes integrated with workplace project.	Formally staged: Thesis 1 must be passed before data collection; Thesis 2 completes analysis and conclusions.
Theoretical Framework Requirement	Mandatory and central.	Required, but often simplified or adapted for practice.	Required, but often simplified or adapted for practice link to technology management.
Empirical Emphasis	May be empirical or conceptual; theory remains dominant.	Strongly empirical and context-specific.	Strongly empirical with organisational and industry relevance.
Evaluation Criteria	Originality, theoretical significance, methodological rigor, scholarly contribution.	Practical impact, problem-solving effectiveness, and applied rigor.	Practical impact, problem-solving effectiveness, and applied rigor in technology management.
Viva Voce Focus	Defence of theoretical contribution and methodological originality.	Defence of practical relevance and managerial implications.	Defence practical relevance, analytical decisions, and applicability to technology management contexts.
Indicator (Dissertation-Focused)	PhD Thesis	DBA Dissertation	DTM Dissertation

GUIDELINE 2: FORMAT OF DOCTORATE THESIS

2.0 FORMAT OF DOCTORATE THESIS

2.1 LANGUAGE

The doctorate thesis must be written in either English or Bahasa Malaysia. The language of the doctorate thesis should be as direct and simple, as the subject matter will allow. Language use should be consistent throughout the doctorate thesis, especially in terms of spelling (American or British). A doctorate thesis must be written in English or *Bahasa Melayu*. International Students, who intend to write the doctorate thesis in *Bahasa Melayu*, an approval from the Faculty is required. All doctorate thesis, regardless of the language in which they have been written must have an abstract in both English and *Bahasa Melayu*.

2.2 TYPING

A doctorate thesis should be typed in word format MS Office Word or text processor.

2.2.1 FONT

Candidates should use the Times New Roman with font size 12 in preparing their doctorate thesis. Other fonts are not acceptable. Chapters and their sub-sections must be given titles. The title of each chapter should be typed using capital letters and centered. A new chapter must start on a new page. The titles should be typed using bold letters and should not be underlined. Write the titles of the sub-sections in “sentence case”, that is the same capitalization that candidate would have used in normal sentence (capitalize only the first word).

2.2.2 SPACE AND FORMAT

The doctorate thesis should only be typed on one side of the page. The text should be double-spaced throughout, including explanatory footnotes, equations, long quotations, appendices, headings and subheadings. However, legends, captions or keys to tables, figures or plates should be single-spaced. The following guidelines should also be observed.

1. The spacing between the lower top margin and the chapter number should be one (1) line spacing
2. The spacing between the chapter number and the title, and between the title and the first line of a text should be one (1) line spacing

3. The spacing between the last line of a text with the title of a subsection should be one (1) line spacing
4. No spacing between the title of a sub-section and the first line of a text
5. No spacing between paragraphs
6. The number and the title of sub-section should be aligned with the left margin
7. The first line of a paragraph should be indented by 1 tab (1.22 cm) from the left margin
8. A new paragraph should not begin on the last line of a page
9. The spacing between the last line of a text and a table, or a figure or an illustration should be one (1) line spacing
10. The spacing after a full stop (.) should be one (1) character spacing
11. The spacing after a comma (,) should be one (1) character spacing

2.2.3 SYMBOL

For symbols that are not available on the computer keyboard, such as copyright symbol, trademark symbol, paragraph marks and Unicode characters, use appropriate function in the MS Office Word to generate them.

2.2.4 TYPING QUALITY

All copies must be of good legible quality. Candidates are required to carefully **proofread** and correct any typographical errors before submitting the doctorate thesis. Students are recommended to use proofread tools such as “Grammarly”. Turnitin similarity report should be less than 25%.

2.2.5 MARGIN

Left margin should be **3 cm (30 mm)** wide for binding purposes. The other three sides that are top, bottom and right margin should be **2.5 cm (25 mm)** wide.

2.2.6 PAGE NUMBERING

Pages should be numbered consecutively throughout the doctorate thesis, including pages of figures, tables and appendices. Preliminary pages preceding Chapter 1 (i.e. from abstract) must carry page numbers in small Roman numerals (i, ii, iii, etc.). The title page should not be numbered. Pagination begins with the first page of Chapter 1 (i.e., Introduction) using Arabic numeric (1, 2, 3, etc.).

Page numbers should be centered and should be printed 1.5cm from the bottom of the page. Font size 12 recommended for numbers. Page numbers should appear by themselves and they are not to be enclosed in parenthesis, hyphens, etc. Each appendix should be identified separately in alphabetical order. The pages of the appendices should also be typed according to the above pagination system. Page numbers should be retained at the centre and bottom of the page (at portrait layout) even though landscape table and figures are attached. Text, tables and figures should be printed on one (1) side of each sheet only.

2.2.7 NOTES AND FOOTNOTES

In the case where notes and footnotes are used with font size 10 and should be kept to minimum.

2.2.8 TABLES AND FIGURES

Source of the tables and figures should be stated in full if it was adopted from copyrighted permission. It should be written at the end of the caption.

2.2.9 COLOUR

Colour can help enormously to present data clearly. However, design the colourful diagrams to preserve as much information as possible in a black and white printout.

GUIDELINE 3: CITATION, REFERENCES AND APPENDICES

3.0 LITERATURE CITATION AND REFERENCING

Any doctorate thesis which makes use of other works, either in direct quotation or by reference, must contain a bibliography listing of these sources. Only works directly cited or quoted in the text should be included in the bibliography. UTeM follows the **Harvard System** for literature citation and referencing. References are made by giving the author's last name together with the year of publication.

3.1 CITATION IN TEXT

3.1.1 AUTHOR'S NAME CITED IN TEXT

In the text, the year of publication appears within parenthesis after the author's surname if the latter forms part of a sentence. For example:

Chong (1986) states that…

In any particular sentence, if several publications are cited, the references should be cited in chronological order. For example:

Jones (2006) and Smith (2008) have both shown…

However, if several publications of the same year are cited the references should be cited in **alphabetical order** and with single author taking precedence over joint authors. For example:

Azis and Harrison (1987) claim that… Where there are more than two authors:

Yamakura et al. (1990) found that...

If several papers by the same author(s) and from the same year are cited, the letters a, b, c, etc. should be put after the year of publication. For example:

Chazdon and Ibrahim (1988b).

3.1.2 AUTHOR'S NAME NOT CITED DIRECTLY IN THE TEXT

Reference to a work or piece of research without mentioning the author in the text then both the author‟s name and publication year are placed at the relevant point in the sentence or at the end of the sentence in brackets. For example:

Making reference to published work appears to be characteristic of writing for a professional audience (Cormack, 1994).

3.1.2.1 NO AUTHOR

Reference from authorless articles should be cited as: (Anonymous, 1998). For example:

Marketing strategy assists our customers in optimizing and executing their go-to-market strategy (Anonymous, 1999).

3.1.2.2 CORPORATE AUTHORS

Reference from official publications of an organization or international bodies/agencies with no personal author should be written as: (SIRIM, 1984). For example:

More recently SIRIM (1984) has issued guidelines…

3.1.2.3 NO DATE

Every effort should be made to establish the year of publication if you intend to use one reference as supporting evidence in an academic submission. However, in case of the year of publication is not available, the abbreviation n.d. is used to denote this:

Directly:

Smith (n.d.) has written and demonstrated…

Indirectly:

Earlier research (Smith, n.d.) demonstrate that…

3.1.2.4 SECONDARY REFERENCING

You may come across a summary of another author‟s work in the source you are reading, which you would like to make reference to in your document. This is called secondary referencing. For example:

Direct reference:

Recently, research carried out in Melaka area by Ariffin (2001 cited in Abdullah, 2007) found that…

Ariffin (2001) as cited in Abdullah (2007) suggests that… Indirect reference:

(Ariffin, 2001 cited in Abdullah, 2007)

3.1.2.5 WEBSITES

When citing material found on a website, you should identify the authorship of the website, either by author‟s surname or organization‟s name. URL or website address should not be written in the text. For example:

Recent research on Super Alloy (Bowman, 2009) has shown…

3.2 REFERENCING

At the end of the doctorate thesis, all the references cited are listed in **alphabetical order** and **should not be indented.** There is no necessity to number or bullet the references. The bibliography should be double-spaced as with the rest of the text using font size 12. An example is provided in ***Appendix M***.

The following bibliographic style must be followed:

3.2.1 REFERENCE FROM BOOKS

Author‟s surname, Initials., Year. *Title of book,* Edition., (only include this if not the first edition) Place of publication: (this must be a town or city, not a country) Publisher.

Example for one author:

Conn, E.E., 1987. *Outlines of Biochemistry,* 5th ed., New York: John Wiley & Sons.

Example for two or more authors:

Kalpakjian, S., and Schmid, S.R., 2001. *Manufacturing Engineering and Technology,* 4th ed., New Jersey: Prentice-Hall.

3.2.2 CHAPTERS OF EDITED BOOKS

Chapter author(s) surname(s), Initials. Year of chapter followed by In: Book editor(s) initials and surnames with edition. After the last name. Year of book. Title of book. Place of publication: Publisher.

Example:

Horking, A.D. 1988. Moulds and Yeasts Associated with Foods of Reduced Water Activity: Ecological Interactions. **In** *Food Preservation by Moisture Control* (Seow, C.C., 2nd ed.), pp. 57-72. London: Elsevier

Applied Science Publication.

3.2.3 BOOKS WHICH HAVE BEEN TRANSLATED

Author, Year. *Title of book*. Translated from (language). Place of publication: Publisher.

Example:

Yahya, R., 2005. *Hidraulik dan Pneumatik.* Translated from English. Johor, Malaysia: UTM Press.

3.2.4 E-BOOKS

The required elements for e-books accessed from the University Library or other sources:

Author, Initials., Year. *Title of book*. [e-book] Place of publication:

Publisher. Followed by "Available through:" include e-book source/database, web address or URL [Accessed date].

Example:

Fishman, R., 2005. *Ceramic Processing.* [e-book] Chester: Castle Press. Available through: Universiti Teknikal Malaysia Melaka Library

<http://library.utem.edu.my> [Accessed on 14 September 2010].

3.2.5 REFERENCE FROM JOURNALS AND NEWSPAPERS

Author, Initials., Year. Title of article. *Full title of journal, Volume number* (Issue / Part number), Page numbers

Example for article:

> Kalotas, T.M., and Lee, A.R., 1990. A Simple Device to Illustrate Angular Momentum Conservation and Instability. *American Journal of Physics,* 58 (6), pp.80 - 81.

Example for newspaper:

> Kipper, D., 2008. Japan‟s New Dawn. *The Times,* 3 Sep, pp.10.

3.2.6 REFERENCE FROM CONFERENCE PROCEEDINGS

Author, Initials., Year. Full title of conference paper. In: followed by editor or name of organization, *Full title of conference.* Location, Date, Place of publication.

Example:

> Hassan, M.D., and. Norshimah, H., 1996. Designing of Primers for Cloning of Papaya Ringspot Virus Coat Protein Gene. In: Hasanah, M.G., Khatijah, M.Y., and Marziah, M., *Proceedings of the* 8th *National Biotechnology Seminar*, Selangor, Malaysia, 24 – 27 May 1996. UKM Publisher.

3.2.7 STANDARDS

Corporate author, Year. *Identifying letters and numbers and full title of the standards.*

Place of publication: Publisher.

Example:

> International Standards Office, 1998. *ISO 690 – 2 Information and documentation: Bibliographical references.* Geneva: ISO.

3.2.8 PATENT

Inventor name, Initials., Assignee., Year. Title. Place. Patent number (status, if an application).

Example:

> Leonard, Y., Super Sports Limited., 2008. Tin Can Manufacture and Method of Sealing. Canada. Pat. 12, 789, 675.

3.2.9 MULTIPLE WORKS FROM THE SAME AUTHOR IN THE SAME YEAR

For example:

> Reed, R.C., 2006a. *The Superalloys – Fundamentals and Applications,* Cambridge: Cambridge University Press.
>
> Reed, R.C., 2006b. *Fusion Welding of Superalloys,*London: Macmillan.

3.2.10 ANONYMOUS (AUTHORLESS) REFERENCE

Depending on the type of document, replace the authorship with Anonymous.

For example:

> Anonymous, 1996. External Trade in Sago Flour and Sago Starch, 1985-1995. *Agricultural Statistics, Sarawak.* Planning Division, Department of Agriculture, Sarawak, Malaysia.

3.2.11 PUBLICATIONS OF INTERNATIONAL BODIES/AGENCIES

Depending on the type of source, replace the author‟s name with the organization name.

For example:

> WHO, 1984. Environmental Health Criteria 39: Paraquat and Diquat. World Health Organization, Geneva.

3.2.12 WEBSITES

Authorship or Source, Year. *Title of web document or web page*. [type of medium] (date of update if available) Available at: include website address or URL [Accessed date].

Example:

> Bowman. R., 2009. *Superalloys: A Primer and History*. [online] Available at: http://www.tms.org/Meetings/Specialty/superalloys2000/Superalloysl oysHistory.html [Accessed on 8 November 2010].

3.3 MATHEMATICAL EQUATIONS

Mathematical equations must be numbered using Arabic numerals. Use an equation editor to insert common mathematical equations or other formulas. Equation numbers must be written at the end of the equation and linked to the chapter number. For example, the numbers (4.3) and (4.4) are given to the third and fourth equations respectively that appear in Chapter 4, as follows:

$$y^2 = 3x^2 + 3xy + C \qquad (4.3)$$

$$x + a^{\,n} = \sum_{k=0}^{n} {}^{n}x^{k}\, a^{n-k} \qquad (4.4)$$

3.4 APPENDICES

This section is optional and will depend on the individual doctorate thesis contents. It contains supplementary illustrative material, original data, and quotations too long for inclusion and not immediately essential to an understanding of the subject. The appendices should be labeled alphabetically such as Appendix A, Appendix B, and so on depending on type and quantity to be included. Specific titles can also be given. Example can be seen in ***Appendix N***.

GUIDELINE 4: BINDING AND DOCTORATE THESIS SUBMISSION

4.0 BINDING

4.1 Based on the acceptance by the respective Faculty, **one (1) copy** of doctorate thesis should be bound in hard cover for Senate Standing Committee for Post Graduate Studies (JKTSPS) recommendation for degree conferment before approval by the Senate.

4.2 Following approval by the Senate, the candidate must submit **one (1) copy** of the approved work to SPS with hard-cover binding. The candidate is also required to submit a soft-copy of his/her work in word format MS Office Word.

4.3 The front doctorate thesis cover shall be printed in accordance to the colour code of the degree being awarded together with the embedded UTeM logo. A Buckram type cover must be used and written with golden ink for the lettering with font size 18 points. The colour of the cover and their code should be as follows:

Doctorate thesis	**Colour**	**Colour code**
Doctorate	Maroon	567

Please use the specified colour code when ordering for binding at the vendor. The title of the doctorate thesis, name of candidate and the degree and year for which the doctorate thesis is submitted should be printed on the **Front Cover** using **Capital Letter Arial Narrow** following the style shown in ***Appendix O***. The student's name, degree and year shall also be printed on the **Spine** of the bound thesis. An example is given in ***Appendix P1*** and ***Appendix P2.***

4.4 A white and good quality (80 grams) paper of A4 size (210 x 297 mm) should be used for all submitted final copies of the doctorate thesis. Photographic illustration should be printed on good quality high- resolution paper with single sided printing.

4.5 CD SUBMISSION

The candidate is required to submit a soft copy of his/her work in MS Office word format. The CD that consists of the soft copy of the doctorate thesis must be labeled according to the following:

a. Full name of the candidate

b. Faculty

c. Title of the doctorate thesis

d. Year of submission

e. Degree

5.0 APPENDIX

APPENDIX 1

FAKULTI PENGURUSAN TEKNOLOGI DAN TEKNOUSAHAWANAN
RESEARCH PROJECT POSTGRADUATE (DTM)
TAHUN: 2024/2025
SEMESTER : 1

SUPERVISOR PROPOSAL FORM

1 Name :

2 Matric No :

3 Pointer :

4 E-mel :

5 Phone No :

6 Proposed Supervisor name*:

 The names of the supervisors should be different.

7. Research Topic :

Student Signature
_____

For office use	
Acceptance date:	Signature:

APPENDIX A

(SAMPLE OF PRE-TITLE PAGE)

Faculty of Technology Management and Technopreneurship

MODEL OF KEY FACTORS OF GREEN HUMAN RESOURCE MANAGEMENT FOR SUSTAINABILITY PERFORMANCE IN GREEN BUILDING CONSTRUCTION

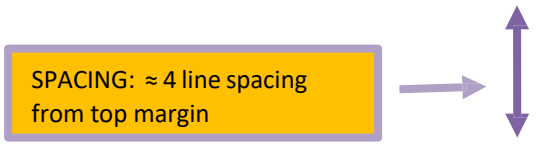
Mohd Syaiful Rizal bin Abdul Hamid

Doctor of Technology Management

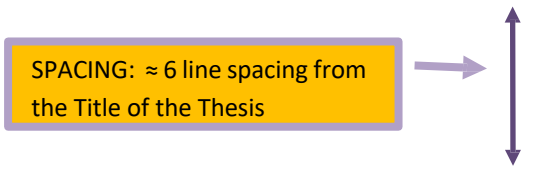
2025

APPENDIX B

Format of Thesis Title Page (Font Type: Times New Roman)



TITLE OF THESIS



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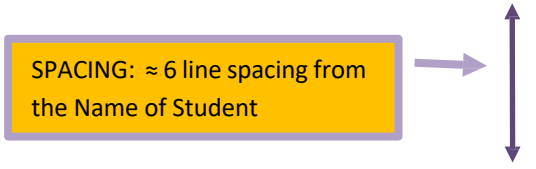
NAME OF STUDENT



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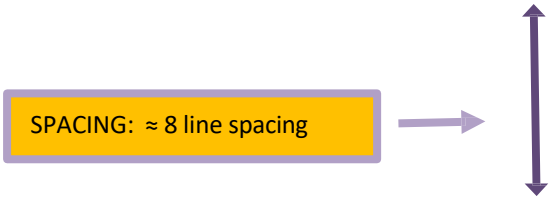
A thesis submitted

in fulfillment of the requirements for the degree of.....



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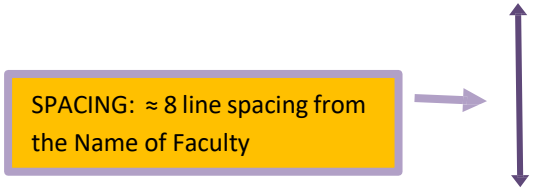
Name of Faculty

(Front size 12, Bold)



UNIVERSITI TEKNIKAL MALAYSIA MELAKA

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YEAR

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APPENDIX C

(SAMPLE OF THESIS TITLE PAGE)

MODEL OF KEY FACTORS OF GREEN HUMAN RESOURCE MANAGEMENT FOR SUSTAINABILITY PERFORMANCE IN GREEN BUILDING CONSTRUCTION

MOHD SYAIFUL RIZAL BIN ABDUL HAMID

A thesis submitted

in fulfillment of the requirements for the degree of Doctor of Technology Management

Faculty of Technology Management and TechnopreneurshiP

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2025

APPENDIX D

DECLARATION

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I declare that this thesis entitled “Thermal analysis using Galerkin Finite Element Method on Printed Circuit Board” is the result of my own research except as cited in the references. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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Signature : .....

Name : .....

Date : .....

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APPENDIX E

APPROVAL

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I hereby declare that I have read this thesis and in my opinion this thesis is sufficient in terms of scope and quality for the award of Doctor of Technology Management.

Signature :…….....

Supervisor Name :…….....

Date :…….....

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APPENDIX F

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DEDICATION

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To my beloved mother and father

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APPENDIX G1

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ABSTRACT

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In the modern professional landscape, the acceptance and application of sustainable practices has turn out to be imperative for organizations targeting to flourish in the long term. In this framework, Green Human Resource Management (GHRM) has appeared as a fundamental approach, concentrating on integrating environmental issues into HRM practices. In spite of the increasing acknowledgement of GHRM's significance, a wide gap exists in the understanding the precise factors within GHRM and their direct influence on sustainable organizational performance (Teng et al, 2019). Non application of sustainable practices, which include recurrent scheduling overruns, delays and deferrals, has now become the order of the day in green building construction, and the reasons of these glitches and problems have captured the attention of experts, researchers and academicians in the field. The aim of this research is to examine the direct effects of Green Human Resource Management factors on sustainable performance and mediating role of Environmental Behavior and propose a Green Human Resource Management model for sustainable performance in UAE green building. The study used quantitative methods alongside with its survey design. The questionnaire was intended to gauge the perceptions of the staff of Al Naboodah Construction Group (ANCG) in UAE on 39 green human resource items classified to four groups, while Environmental Behaviors use as mediator was measure using 10 items. Then lastly the Sustainability Performance as dependent variable it was measured using 17 items. A purposive sampling was employed for the questionnaire survey. The sample size for this study was 302, sampled out of 1400 population of the study. A total of 297 questionnaires, or 98.34 percent of the overall questionnaires distributed, were used for data collection. The gathered information was then utilized to create a smart-pls causal relationship model with four independent GHRM factor constructs and one dependent performance construct. The model was assessed at measurement component until it achieved the fitness criteria. Then, it was evaluated at the structural component for its validity and hypothesis testing. After going through the modelling processes, the model attained the fitness criteria at the measurement and structural components of the model. The model has achieved the goodness-of-fit (GoF) with the value of 0.806 indicates of having global large validating power. The results revealed that three green employee participants, Green Training and Development, Green Reward and Compensation out of five paths/hypotheses are having significant relationship with the sustainability performance. While the mediator was found to have a full mediation effect with the four independent factors and the sustainable performance. Project management firms to pinpoint market developments and specifications in the green building construction industry and to then choose workers in accordance with these factors; to Al Naboodah Construction Group (ANCG) by assisting them in developing better strategies which may be incorporated into the UAE 2030 Plan; and Project Manager and Employees. This investigation has significance for stakeholders in the green building construction sector as a whole and for UAE stakeholders in distinctive

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APPENDIX G2

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ABSTRAK

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Dalam landskap profesional moden, penerimaan dan penerapan amalan mampan telah menjadi penting bagi organisasi yang menyasarkan untuk berkembang dalam jangka panjang. Dalam rangka kerja ini, Pengurusan Sumber Manusia Hijau (GHRM) telah muncul sebagai pendekatan asas, menumpukan pada penyepaduan isu alam sekitar ke dalam amalan HRM. Walaupun peningkatan pengakuan kepentingan GHRM, jurang yang luas wujud dalam pemahaman faktor tepat dalam GHRM dan pengaruh langsungnya terhadap prestasi organisasi yang mampan (Teng et al, 2019). Ketidakgunaan amalan mampan, yang termasuk penjadualan berulang, kelewatan dan penangguhan, kini telah menjadi urutan hari dalam pembinaan bangunan hijau, dan sebab-sebab gangguan dan masalah ini telah menarik perhatian pakar, penyelidik dan ahli akademik dalam bidang tersebut. Matlamat penyelidikan ini adalah untuk mengkaji kesan langsung faktor Pengurusan Sumber Manusia Hijau terhadap prestasi mampan dan peranan pengantara Tingkah Laku Alam Sekitar dan mencadangkan model Pengurusan Sumber Manusia Hijau untuk prestasi mampan dalam bangunan hijau UAE. Kajian ini menggunakan kaedah kuantitatif bersama dengan reka bentuk tinjauannya. Soal selidik ini bertujuan untuk mengukur persepsi kakitangan Kumpulan Pembinaan Al Naboodah (ANCG) di UAE terhadap 39 item sumber manusia hijau yang dikelaskan kepada empat kumpulan, manakala Tingkah Laku Alam Sekitar digunakan sebagai pengantara diukur menggunakan 10 item. Kemudian akhir sekali Prestasi Kelestarian sebagai pembolehubah bersandar diukur menggunakan 17 item. Persampelan bertujuan digunakan untuk tinjauan soal selidik. Saiz sampel untuk kajian ini ialah 302, sampel daripada 1400 populasi kajian. Sebanyak 297 soal selidik, atau 98.34 peratus daripada keseluruhan soal selidik yang diedarkan, digunakan untuk pengumpulan data. Maklumat yang dikumpul kemudiannya digunakan untuk mencipta model hubungan sebab musabab pintar-pls dengan empat konstruk faktor GHRM bebas dan satu konstruk prestasi bergantung. Model ini dinilai pada komponen pengukuran sehingga mencapai kriteria kecergasan. Kemudian, ia dinilai pada komponen struktur untuk ujian kesahan dan hipotesisnya. Selepas melalui proses pemodelan, model mencapai kriteria kecergasan pada komponen pengukuran dan struktur model. Model tersebut telah mencapai goodness-of-fit (GoF) dengan nilai 0.806 menunjukkan mempunyai kuasa pengesahan besar global. Keputusan menunjukkan bahawa tiga peserta pekerja hijau, Latihan dan Pembangunan Hijau, Ganjaran dan Pampasan Hijau daripada lima laluan/hipotesis mempunyai hubungan yang signifikan dengan prestasi kemampanan. Manakala pengantara didapati mempunyai kesan pengantaraan penuh dengan empat faktor bebas dan prestasi mampan. Firma pengurusan projek untuk menentukan perkembangan dan spesifikasi pasaran dalam industri pembinaan bangunan hijau dan kemudian memilih pekerja mengikut faktor-faktor ini; kepada Kumpulan Pembinaan Al Naboodah (ANCG) dengan membantu mereka dalam membangunkan strategi yang lebih baik yang mungkin dimasukkan ke dalam Pelan UAE 2030; dan Pengurus Projek dan Pekerja. Siasatan ini mempunyai kepentingan bagi pihak berkepentingan dalam sektor pembinaan bangunan hijau secara keseluruhan dan bagi pihak berkepentingan UAE secara tersendiri

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APPENDIX H

ACKNOWLEDGEMENTS

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First and foremost, I would like to take this opportunity to express my sincere acknowledgement to my supervisor Prof. Dr. Saiful Rizal from the Faculty of Technology Management and Technopreneurship, Universiti Teknikal Malaysia Melaka (UTeM) for his essential supervision, support and encouragement towards the completion of this thesis.

I would also like to express my greatest gratitude to Ts. Dr. Nurulizwa from Faculty of Technology Management and Technopreneurship, co-supervisor of this research for his advice and suggestions in marketing intelligence management. Special thanks to UTeM short term grant funding for the financial support throughout this project.

Particularly, I would also like to express my deepest gratitude to Mr. Ali and Mr. Abu, the technicians from Faculty of Technology Management and Technopreneurship for their assistance and efforts in all the lab and analysis works.

Special thanks to all my colleagues, my beloved mother, father and siblings for their moral support in completing this degree. Lastly, thank you to everyone who had been associated to the crucial parts of realization of this project.

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APPENDIX I

Sample of Table of Contents

(Main heading and subheading are numbered)

TABLE OF CONTENTS

APPENDIX J1

Sample of List of Tables

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LIST OF TABLES

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APPENDIX J2

Sample of List of Figures

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LIST OF FIGURES

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FIGURE TITLE PAGE

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APPENDIX J3

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Sample of Table in Text

Table 2.1: Comparison of Experimental and Computer Simulation Results

Distance Ratio	Experiment (Mean value)	Computer Simulation (Mean Value)
0.125	0.25	0.137
0.250	0.46	0.560
0.375	0.63	0.738
0.500	0.75	0.861
0.625	0.83	0.939
0.750	0.88	0.981
0.875	0.93	0.997
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APPENDIX J4

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Sample of Figure or Illustration in Text

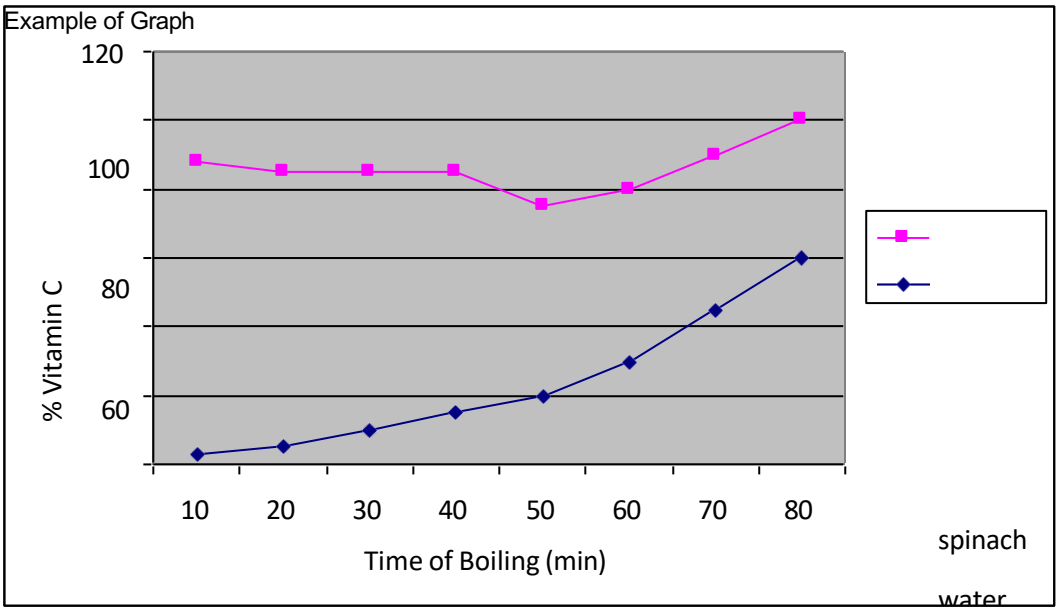

Figure 2.1: Effect of Boiling on Leaching of Vitamin C from Spinach

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Example of Pie Chart

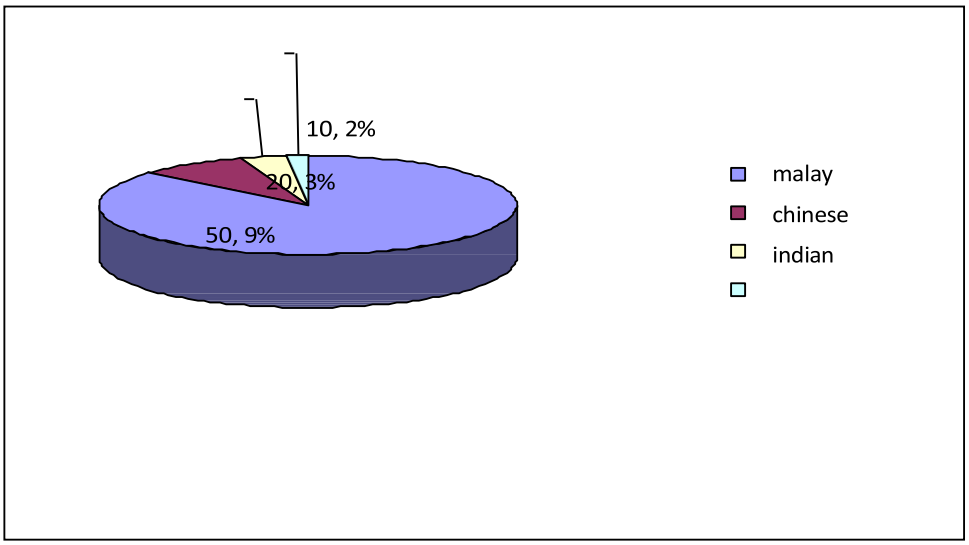

Figure 2.2: Number of Population in Jasin by Races

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APPENDIX K

Sample of List of Symbols

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LIST OF SYMBOLS

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D, d	-	Diameter
F	-	Force
g	-	Gravity = 9.81 m/s I - Moment of inersia
1	-	Length
m	-	Mass
N	-	Rotaional velocity
P	-	Pressure
Q	-	Volumetric flow-rate r - Radius
T	-	Torque
Re	-	Reynold number
V	-	Velocity
w	-	Angular velocity
x	-	Displacement
z	-	Heig

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APPENDIX L

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Sample of Space and Format

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CHAPTER 1

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INTRODUCTION

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1.1 Background

Kenaf is a warm annual crop. It is a member of hibiscus family and related to cotton and 1.22 cm jute.

Kenaf is originally a native in Africa. For the last 200 years, India has produced and used kenaf. In the United States, kenaf was introduced as material for the war effort during World War II. Then in 1950s, the US researchers have found that kenaf was an excellent cellulose fiber source for pulping of paper products (Webber et. al., 2002).

3.0 cm

2.5 cm

Kenaf plant is growing to more than 3 meters tall within 4-5 months. The stems are 2.5cm – 3.5cm diameter and consisting of two parts, an outer fibrous bark and an inner woody core (Zhang, 2003). Raw kenaf fiber obtained from the outer fibrous bark is abundant of lignocelluloses fibers. The core is the spongy tissue inner the bark of the plant.

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1.2 Statement of the Purpose

The purpose of the research is to investigate the effect of fiber treatment on the mechanical properties such as tensile, flexural and impact properties and water absorption of kenaf/polyester composite1

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1.3 Problem Statement

Composite materials offer many exceptional properties that are difficult or impossible to match with traditional materials such as steel, aluminum and wood. Previously, composites made of glass and carbon fibers replaced many metal applications by supplying the benefits of low cost and high strength properties. Synthetic fiber composite is very well known for its strength and rigidity. For an example, the bicycle frame made from glass-carbon composites are offer high strength and lightweight.

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APPENDIX M

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APPENDIX N

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Sample of List of Appendices

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LIST OF APPENDICES

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APPENDIX O

Front (Hard) Cover of Thesis (Font Type: Arial Narrow)

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UTeM LOGO

(14 point-gold coloured font)

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TITLE OF THE THESIS

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NAME OF STUDENT

(Uppercase, centred, bold, 18 gold point coloured font)

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NAME OF DEGREE

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YEAR

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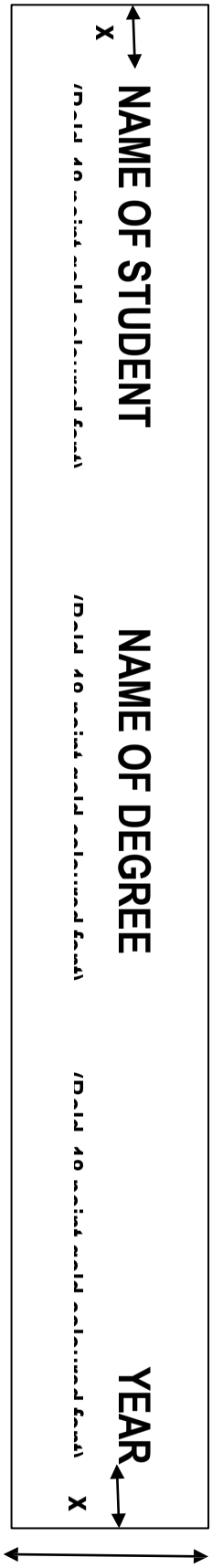
APPENDIX P1

Thesis Spine (Font Type: Arial Narrow)



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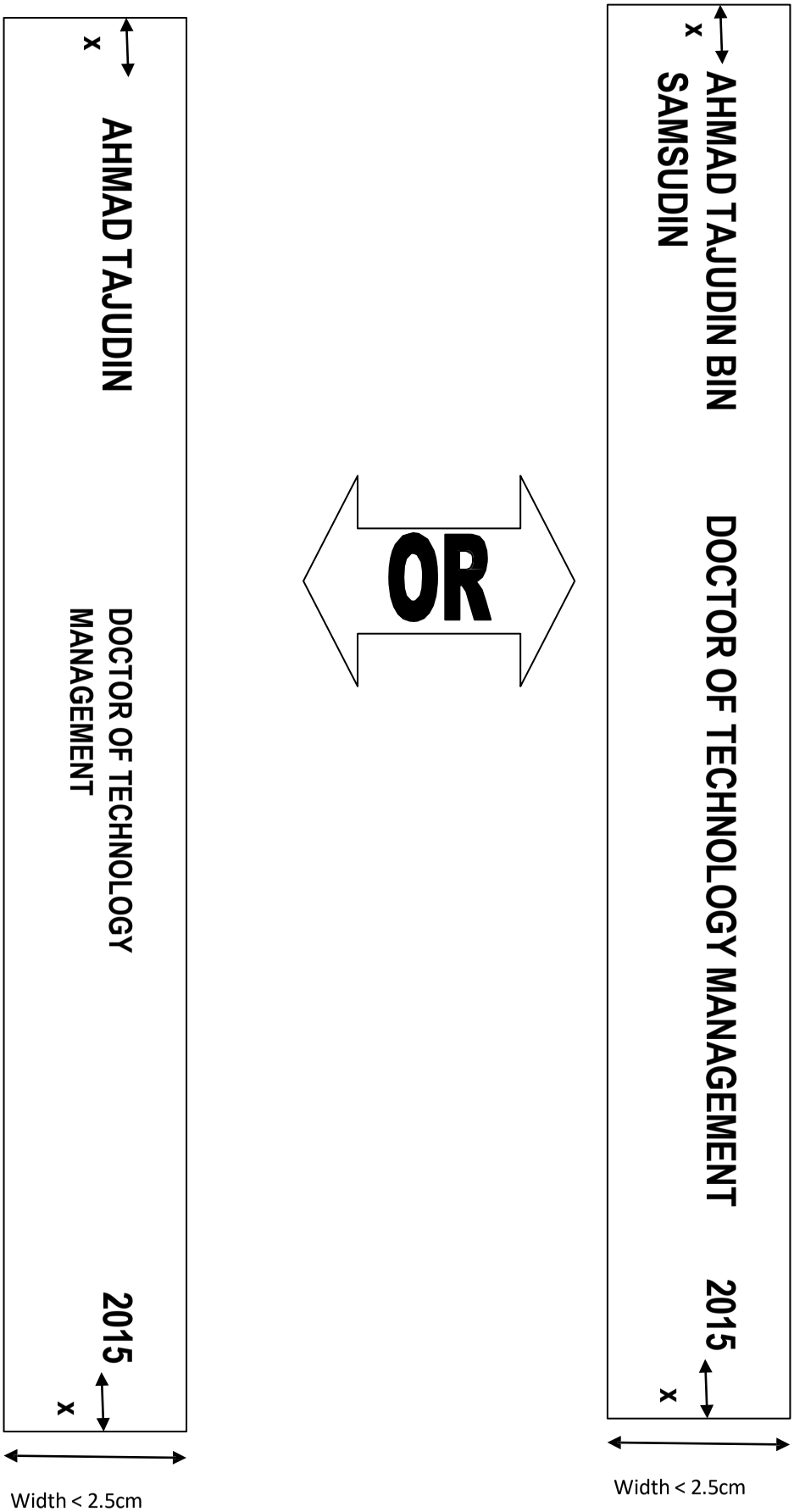
APPENDIX P2

Sample of Thesis Spine (Font Type: Arial Narrow)



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1. MQA, Programme Standards: Business Studies, 2021
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Semester	Activities
4	• Supervisor selection • Research proposal defense (Week 14-week 15 instructional sessions) -Consists of Chapter 1, 2 and 3
5	• Research methodology class • Data collection • Workshop academic writing for chapter 4 and chapter 5
6	• Submission of Doctorate Thesis for viva session • Viva session (after mid semester break) • Doctorate Thesis Correction

Faculty of Technology Management and Technopreneurship

Universiti Teknikal Malaysia Melaka Hang Tuah Jaya,

76100, Durian Tunggal, Melaka, Malaysia.